REMARKS

Claims 6-9 are all the claims pending in the application. Claim 6 has been amended, support for which can be found, for example, in Table 1 at page 13, of the present specification.

Applicant respectfully submits that with the entry of the proposed amendments, the present application will be in condition for allowance, based on the Examiner's comments during an interview in the parent application. Since the amendments raise no new issues, entry of the above amendments is respectfully requested.

I. Rejection of claims 6-9 under 35 U.S.C. § 103(a)

On pages 2-4 of the Office Action, the Examiner maintains the rejection of claims 6-9 under 35 U.S.C. 103(a) as allegedly being unpatentable over Kasai et al. (U.S. Patent 6,007,592) in view of Sakatani et al. (U.S. Patent 5,804,513).

Applicant responds as follows.

The present invention is directed to a method for polishing a metal film on a semiconductor substrate, comprising the steps of: providing a polishing composition comprising alumina-type fine particles containing or not containing aluminum hydrate, a polishing accelerator and water, said alumina-type fine particles having an α conversion ratio of from 68 to 90% and a specific surface area of from 31 to 77 m^2/g, and mechanochemically polishing a metal film on said semiconductor substrate with said polishing composition.

The Examiner asserts that Sakatani discloses that defects occur on the polishing surface when α-type aluminum oxide is used when the surface area is less than about

40 m^2/g (col. 4, lines 23-27). However, contrary to the Examiner's assertion, Sakatani discloses at col. 4, lines 33-37:

> In the present invention, when aluminum oxide is used as the oxide (i), an aluminum oxide of which crystalline form is transition alumina or amorphous aluminum oxide is preferably used. When α-type aluminum oxide is used defects tend to occur on the polished surface.

Applicant submits that this disclosure is distinct from the disclosure at col. 4, lines 23-27. Therefore, Sakatani teaches away from the use of α-type aluminum oxide, regardless of whether the particles have a surface area of about 40 m^2/g to about 150 m^2/g or not. In this regard, Applicant notes that while the Examiner indicates that Sakatani uses α-type alumina in one example of the invention, it is actually used in comparative examples (see Comparative Example 2 at col. 9, lines 52-55, and Comparative Example 10 at col. 12, lines 19-22, as well as Table 1 at cols. 13-14). This is further support for the position that Sakatani teaches away from α-alumina.

Accordingly, one of ordinary skill in the art would not be motivated to combine the cited references because Sakatani teaches against the use of α-type alumina oxide in the composition, such that one would not have applied Sakatani's teachings to Kasai's α-alumina. Accordingly, the present invention is not obvious, especially in light of the importance of the α-conversion ratio for achieving the desired effects of the composition.

Further, the Examiner asserts that Sakatani discloses a surface area in the range of the claimed invention and since α-type alumina oxide is used in one example, Sakatani does not teach against the use of α-type alumina particles. However, the MPEP mandates that "the reference must be considered as a whole," and therefore

requires the Examiner to consider those passages of Sakatani that lead away from the claimed invention. MPEP 2141. Therefore, the Examiner must consider the disclosure of Sakatani that teaches away from the use of α-type alumina particles, including the distinct disclosure at col. 4, lines 33-37 and the fact that the example the Examiner is relying upon is actually a comparative example, not an invention example.

In view of Sakatani's teaching away from the use of α-type alumina particles, there is no motivation in Sakatani to apply its teaching to Kasai.

In addition, one of ordinary skill in the art would not expect the advantages of the alumina particles with an α-conversion of 68-90% and a specific surface area of 31-77 m^2/g of the present invention.

That is, as shown in the 132 Declaration submitted on August 22, 2001, where the surface area and/or the α-conversion are outside the claimed ranges, an increase in scratches, reduction in selection ratio and/or reduction in polishing rate were observed. Accordingly, the present invention provides unexpectedly superior results, as discussed at the interview in the parent application.

Accordingly, withdrawal of the foregoing rejection is respectfully requested.

II. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone

interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

Keiko K. Takagi
Registration No. 47,121

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: July 3, 2002

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

6. (amended) A method for polishing a metal film on a semiconductor substrate, comprising the steps of:

providing a semiconductor substrate comprising a metal film and an insulating film therein;

providing a polishing composition comprising alumina fine particles containing or not containing aluminum hydrate, a polishing accelerator and water, said alumina fine particles having an α conversion ratio of from [65] 68 to 90% and a specific surface area of from [30] 31 to [80] 77 m^2/g, and

mechanochemically polishing a metal film on said semiconductor substrate with said polishing composition.